Weekly Report

November 27, 2016

1 Work

Deep Learning

I start reading deep learning papers about graph. Since it is difficult to understand, I think I need more time to process.

Semantic Trajectory

This week, I find a author topic model to model mobile phone trajectory data. Each poi corresponds to a word and a lot of poi form a basestation. A mobile phone user goes through some stations, then he is the author of this documents (basestation). I report this concept in our idea evaluation session on Friday.

2 Plan for next week

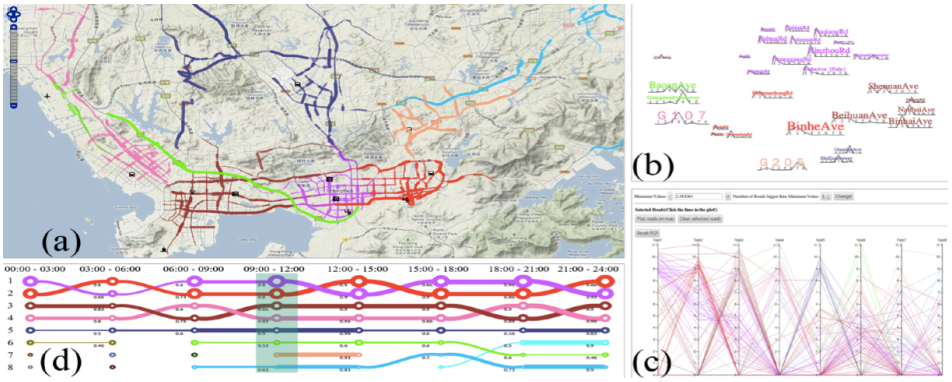
- Test Matlab toolbox of author topic model.
- Read some deep learning papers about graph.

3 Paper Reading

3.1 Visualizing Hidden Themes of Taxi Movement with Semantic Transformation

本文将出租车轨迹的记录点都映射为最近的街道名称，然后通过文本分析方法LDA，对出租车的轨迹进行主题抽取（Fig 3.1）。每一个主题就是一些街道的聚

类。



3.2 Exploring trajectory-driven local geographic topics in foursquare

与第一篇文章类似，这篇文章也是使用了LDA方法对签到数据进行分析。每个人的所有签到数据就构成一份文档，如$(venue_{check-in_1}, ..., venue_{check-in_N})$。作者对于抽取出来的主题信息等，绘制在地图上做了一些分析。

3.3 Travel Recommendation via Author Topic Model Based Collaborative Filtering.

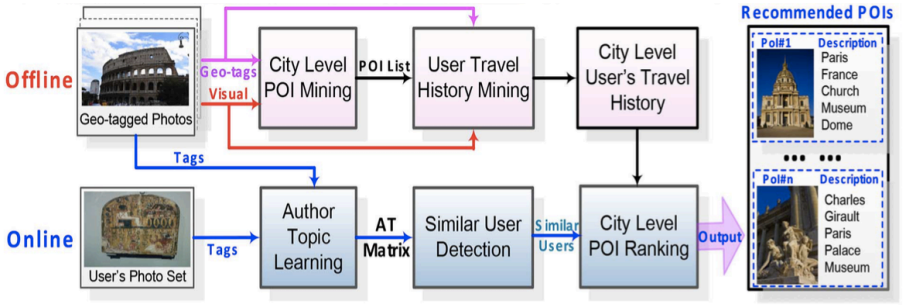
这篇文章用到的数据是社交网络的图片数据，每张图片都有一些标签，如巴黎等。作者将Author Topic Model中的单词、文章、作者对应到标签、图片、用户。然后在得到用户感兴趣的主题后，根据用户的相关性，进行地点推荐。

3.4 Author Topic Model-Based Collaborative Filtering for Personalized POI Recommendations

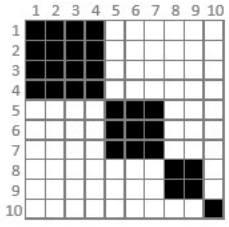
文章内容基本和上一篇一致，但是详细讲述了数据预处理以及应用Author Topic Model中的各种细节（Fig 3.4）。

3.5 Magnostics: Image-based Search of Interesting Matrix Views for Guided Network Exploration

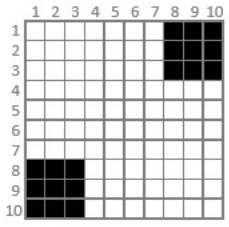
本文探索了对于矩阵图像在复杂多变有噪声的情况下，前任提出的特征是否还能有效检测出特征矩阵的模式（Fig 3.5）。文章从30中特征中选取出来了6中特



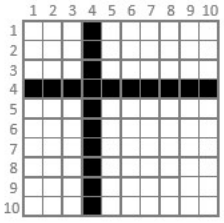
征，用来衡量6种模式（Blok、Off-Diag Block、Line/Star、Bands、AntiPattern：Bandwidth、Antipattern：Noise）。



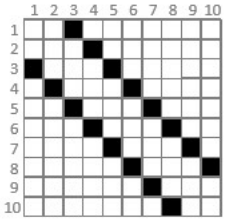
(a) Block.



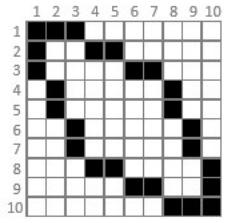
(b) Off-Diag. Block.



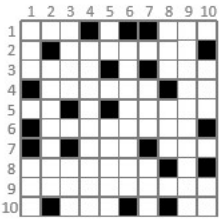
(c) Line/Star.



(d) Bands.



(e) Antipattern: Bandwidth.



(f) Antipattern: Noise.